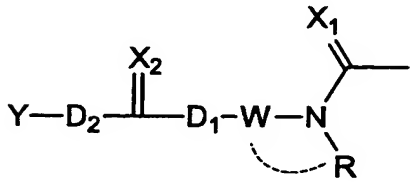
CLAIMS

1. A prodrug compound having, as a modification group to be eliminated from the prodrug, a group represented by the formula:

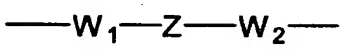


wherein

X_1 and X_2

are each an oxygen atom or a sulfur atom,

W is a chain divalent hydrocarbon group optionally having substituent(s) or a divalent group represented by the formula:



wherein W_1 and W_2 are each a chain divalent hydrocarbon group or a bond, Z is a divalent hydrocarbon ring group optionally having substituent(s), a divalent heterocyclic group optionally having substituent(s), an oxygen atom, SO_n wherein n is 0, 1 or 2, or >N-E wherein E is a hydrogen atom, a hydrocarbon group optionally having substituent(s), a heterocyclic group optionally having substituent(s), a lower alkanoyl group, a lower alkoxycarbonyl group, an aralkyloxycarbonyl group, a thiocarbamoyl group, a lower alkylsulfinyl group, a lower alkylsulfonyl group, a sulfamoyl group, a mono-lower alkylsulfamoyl group, a di-lower alkylsulfamoyl group, an arylsulfamoyl group, an arylsulfinyl group, an arylsulfonyl group, an arylcarbonyl group or a carbamoyl group optionally

having substituent(s), and when Z is an oxygen atom, SO_n or >N-E, W_1 and W_2 are each a chain divalent hydrocarbon group,

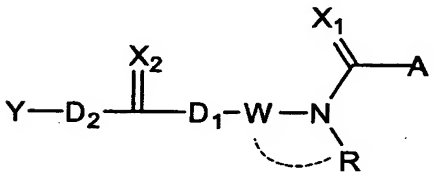
R is a hydrogen atom, a hydrocarbon group optionally having substituent(s) or a heterocyclic group optionally having substituent(s), and

R and W may be bonded to each other when R is not a hydrogen atom,

D_1 and D_2 are each a bond, an oxygen atom, a sulfur atom or $>NR_1$ wherein R_1 is a hydrogen atom or a hydrocarbon group optionally having substituent(s), except for when both D_1 and D_2 are bonds, and

Y is a hydrocarbon group optionally having substituent(s) or a heterocyclic group optionally having substituent(s).

2. The compound of claim 1, which is a compound represented by the formula (I):



(I)

wherein A is a group remaining from elimination of hydrogen from a parent compound H-A of a prodrug having a group capable of bonding to a carbon atom of a modification group eliminatable from a prodrug, via a carbon-oxygen bond, a carbon-sulfur bond or a carbon-nitrogen bond, and other symbols are as defined in claim 1,

or a salt thereof.

3. The compound of claim 1, wherein R is a hydrocarbon group optionally having substituent(s) or a heterocyclic group optionally having substituent(s).

4. The compound of claim 1, wherein Z is a divalent hydrocarbon ring group optionally having substituent(s) or a divalent heterocyclic group optionally having substituent(s).

5. The compound of claim 1, wherein X_1 and X_2 are each an oxygen atom.

6. The compound of claim 1, wherein D_1 and D_2 are each a bond or an oxygen atom, except for when both D_1 and D_2 are bonds.

7. The compound of claim 1, wherein W is a chain divalent hydrocarbon group optionally having substituent(s).

8. The compound of claim 1, wherein W is an ethylene group.

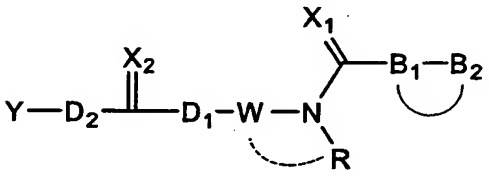
9. The compound of claim 1, wherein R is a C_{1-6} hydrocarbon group optionally having substituent(s).

10. The compound of claim 1, wherein Y is a C_{1-6} hydrocarbon group optionally having substituent(s) or a saturated heterocyclic group optionally having substituent(s), which contains, as ring-constituting atom, 1 to 4 heteroatom(s) selected from oxygen atom, nitrogen atom and sulfur atom.

11. The compound of claim 1, wherein X_1 and X_2 are each an oxygen atom, D_1 and D_2 are each a bond or an oxygen atom except for when both D_1 and D_2 are bonds, W is an ethylene group, R is a C_{1-6} alkyl group, and Y is a C_{1-6} hydrocarbon group optionally having substituent(s) or a saturated oxygen-containing

heterocyclic group optionally having substituent(s), which may further contain, as ring-constituting atom, 1 to 3 heteroatom(s) selected from oxygen atom, nitrogen atom and sulfur atom.

12. The compound of claim 1, which is a compound represented by the formula (II):



(II)

wherein $-B_1-B_2$ is a group remaining from elimination of hydrogen from a pharmaceutical compound $H-B_1-B_2$ wherein $H-B_1-$ is a hydroxyl group, a thiol group, an amide group or an optionally fused, nitrogen-containing heterocycle optionally having substituent(s), which is capable of bonding to a carbon atom of a modification group eliminatable from a prodrug, via a carbon-oxygen bond, a carbon-sulfur bond or a carbon-nitrogen bond, and other symbols are as defined in claim 1, or a salt thereof.

13. The compound of claim 12, wherein B_1 is an optionally fused, nitrogen-containing heterocyclic group optionally having substituent(s), which is capable of bonding to a carbon atom of a modification group eliminatable from a prodrug, via a carbon-nitrogen bond.

14. The compound of claim 13, wherein the nitrogen-containing heterocyclic group represented by B_1 is a 5 or 6-membered aromatic heterocyclic group containing 1 to 4 nitrogens.

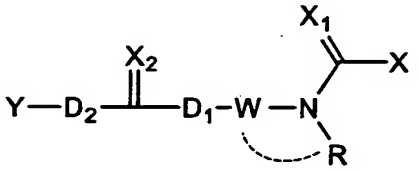
15. The compound of claim 14, wherein the aromatic heterocycle

in the 5 or 6-membered aromatic heterocyclic group containing 1 to 4 nitrogens, which is represented by B_1, is imidazole, pyrrole, pyrazole, isoxazole, oxazole, thiazole or triazole.

16. (1) A production method of the compound of claim 2, which comprises reacting a pharmaceutical compound having an eliminatable proton (H) represented by the formula (III):

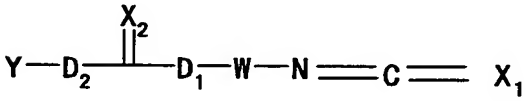
H-A (III)

or a salt thereof with a compound represented by the formula (IV):



(IV)

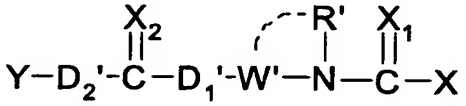
wherein X is a leaving group, and other symbols are as defined in claim 1, or a salt thereof, or a compound of the formula (V):



(V)

wherein each symbol is as defined in claim 1, or a salt thereof.

17. A compound represented by the formula (VI):



(VI)

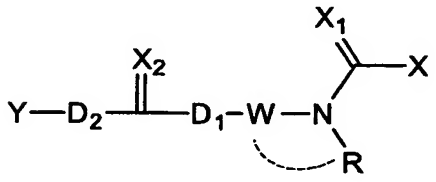
wherein X_1 and X_2 are each an oxygen atom or a sulfur atom, W' is a chain divalent hydrocarbon group having 2 or more carbon atoms and optionally having substituent(s), or a divalent

group represented by the formula:

$$-W_1'-Z'-W_2'-$$

wherein W_1' and W_2' are each a chain divalent hydrocarbon group or bond, Z' is a divalent hydrocarbon ring group optionally having substituent(s) or a divalent heterocyclic group optionally having substituent(s), R' is a hydrocarbon group optionally having substituent(s) or a heterocyclic group optionally having substituent(s), R' is optionally bonded to W', D_1' is an oxygen atom or a sulfur atom and D_2' is an oxygen atom, or D_1' is a sulfur atom and D_2' is a bond, Y is a hydrocarbon group optionally having substituent(s) or a heterocyclic group optionally having substituent(s), and X is a leaving group, or a salt thereof.

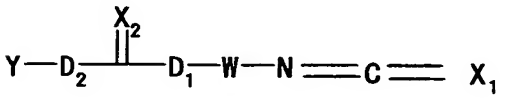
18. Use of a compound represented by the formula (IV):



(IV)

wherein X is a leaving group, and other symbols are as defined in claim 1, for the production of a prodrug compound or a salt thereof.

19. Use of a compound of the formula (V):



(V)

wherein each symbol is as defined in claim 1, for the production of a prodrug compound or a salt thereof.